

**Nevada Division of Environmental Protection
Chemical Accident Prevention Program
Element Audit Checklist**



Facility:	Process(es) Covered:	Date:	
VI. MECHANICAL INTEGRITY PROGRAM			
A. PROCEDURE/POLICY REVIEW			
1) EXISTENCE, STRUCTURE AND FORMAT FOR A MECHANICAL INTEGRITY PROGRAM	NAC Ref.	Resp. Code	
i. Does a well-defined mechanical integrity program appear to exist (i.e., are the requirements of sections 2 through 9, satisfied)?	459.95421		
Notes/Comments Pertaining to Responses to Questions under Issue 1):			
2) IDENTIFICATION & LISTING OF PIPING, EQUIPMENT, & INSTRUMENTS	NAC Ref.	Resp. Code	
i. Have all pressure vessels and storage tanks (operating in excess of 15 psi) been identified, and is design information available?	459.95421(2a)		
ii. Have all vessels and storage tanks (operating at 15 psi or less) been identified, and is design information available?	459.95421(2a)		
iii. Have all piping systems, including components such as valves, within the process been identified and assigned a specification, and are the piping specifications available?	459.95421(2b)		
iv. Have all pressure relief devices been identified, and is design information available?	459.95421(2c)		
v. Have all flares been identified, and are the vendor data and design information available?	459.95421(2c)		
vi. Have all scrubbers that are either part of this process, or provide atmospheric scrubbing to a building that contains this process, been identified, are all of the scrubber system components identified, and are the vendor data and vendor O&M manuals available?	459.95421(2c)		
vii. Have all emergency shutdown systems been identified, and are system schematics available?	459.95421(2d)		



Notes/Comments Pertaining to Responses to Questions under Issue 3):		
4) DEVELOPMENT OF MAINTENANCE PROCEDURES	NAC Ref.	Resp. Code
<i>In each of the following components, have procedures been developed for maintenance activities and have they been confirmed to follow generally accepted good engineering practices:</i>		
i. Pressure vessels and storage tanks	459.95421(1a & 1d)	
ii. Process piping	459.95421(1a & 1d)	
iii. Pressure relief devices	459.95421(1a & 1d)	
iv. Pressure relief systems	459.95421(1a & 1d)	
v. Scrubber systems	459.95421(1a & 1d)	
vi. Building ventilation systems (if CAPP process inside)	459.95421(1a & 1d)	
vii. Emergency shutdown systems	459.95421(1a & 1d)	
viii. Instrumentation	459.95421(1a & 1d)	
ix. Sensors	459.95421(1a & 1d)	
x. Alarms systems	459.95421(1a & 1d)	
xi. Pumps	459.95421(1a & 1d)	
xii. Compressors	459.95421(1a & 1d)	
xiii. Other rotating equipment?	459.95421(1a & 1d)	



Notes/Comments Pertaining to Responses to Questions under Issue 4):		
5) DEVELOPMENT OF TRAINING PROGRAM	NAC Ref.	Resp. Code
<i>Is training required for all maintenance personnel in each of the following areas:</i>		
i. An overview of the process and the potential hazards associated with the process	459.95421(1b1)	
ii. Training in the procedures related to the job tasks, to ensure that they can be performed in a safe manner	459.95421(1b2)	
iii. Training in management of change provisions, including how to recognize a change that would prompt the need for the MOC?	459.95421(1b3)	
Notes/Comments Pertaining to Responses to Questions under Issue 5):		
6) QUALITY ASSURANCE/QUALITY CONTROL PROCEDURES	NAC Ref.	Resp. Code
i. Does the mechanical integrity program provide a mechanism to ensure that new equipment, instruments and controls are checked to ensure suitability with the process?	459.95421(1h)	
ii. Does the mechanical integrity program provide a mechanism to ensure that equipment, instruments and controls are checked to ensure that installation is per design specifications and manufacturers instructions?	459.95421(1i)	
iii. Does the mechanical integrity program provide a mechanism to ensure that maintenance materials, spare parts, and equipment are suitable for the process for which they will be used?	459.95421(1j)	



Notes/Comments Pertaining to Responses to Questions under Issue 6):		
7) INSPECTION OF IMPLEMENTATION RECORDS	NAC Ref.	Resp. Code
i. Are maintenance procedures available to maintenance personnel? (<i>refer to B-1</i>)	459.95421(1a)	
ii. Does a random check of records indicate that training of maintenance personnel is being conducted as required by this section (<i>refer to B-2</i>)?	459.95421(1b)	
iii. Does a random check of records indicate that scheduled maintenance activities are being completed and properly documented? (<i>refer to B-3</i>)	459.95421(1c, f)	
iv. Does a random check of records indicate that any deficiencies found to be outside of acceptable limits (as defined in the PSI) during the performance of maintenance activities, were corrected before the equipment, instruments, controls were returned to service? (<i>refer to B-3</i>)	459.95421(1c, f)	
v. Does a random check of purchasing records and installation work orders indicate that program quality control measures are being implemented? (<i>refer to B-4</i>)	459.95421(1h, i, j)	
Notes/Comments Pertaining to Responses to Questions under Issue 7):		



General Procedure/Policy Review Notes/Comments:

B. ON-SITE INSPECTION - RECORDS AUDIT

1) VERIFY EXISTENCE AND AVAILABILITY OF MAINTENANCE PROCEDURES		Resp. Code
a. Do the procedures for preventative and corrective maintenance generally appear to be in place and accessible to maintenance employees as indicated on the data forms for the following components:		
- Pressure vessels & storage tanks		
- Piping systems		
- Pressure relief devices		
- Pressure relief systems		
- Scrubber systems		
- Building ventilation systems (<i>if CAPP process inside</i>)		
- Emergency shutdown systems		
- Instrumentation		
- Sensors (<i>toxic/combustible gas, flame</i>)		
- Alarm systems		
- Pumps		
- Compressors		
- Other rotating equipment?		
b. Do the safe work practices appear to be in place and accessible to maintenance employees and is there evidence of their use:		
- Hot Work		
- Lockout/Tagout		
- Confined Space		
- Process Equipment Opening / Line Breaking		
- Controlled Access		
- Other type of safe work permit?		
Notes/Comments Pertaining to Responses to Questions under Issue 1):		



3) REVIEW THE SYSTEM USED TO SCHEDULE AND TRACK MAINTENANCE ACTIVITIES. SELECT 2 TO 4 COMPONENTS FOR SPECIFIC REVIEW. LIST ON THE FOLLOWING TABLE:							
#	Component ID #	Component Description (Valve, Vessel, Pump, etc.)	Type of Activity (Scheduled PM or Repair)	Work Order Identifier			
i							
ii							
iii							
iv							
Inquiry/Observation				Resp. Code:			
				i	ii	iii	iv
a. Is the component being maintained pursuant to the schedule?							
b. Is the maintenance activity & frequency based upon the most conservative criteria?							
c. Is the following information being provided in the maintenance record:							
- Date of activity							
- Name of inspector or maintenance person							
- Serial number or component identifier							
- Description of inspection or test (or required repair activity)							
- Results of inspection or test?							
d. Is there a maintenance procedure associated with this activity?							
e. Are there safe work practices associated with this activity?							
f. If a repair of equipment operating outside of acceptable limits, was the deficiency corrected before returning to service?							
Notes/Comments Pertaining to Responses to Questions under Issue 3):							

4) REVIEW QUALITY ASSURANCE/QUALITY CONTROL (QA/QC) PRACTICES		Resp. Code
a.	Is there evidence that a purchase order for a process component is being confirmed against the design specification?	
b.	Is there evidence that the receiving documentation for an item is being confirmed against the applicable purchase order?	
c.	Is there evidence that checks are performed to ensure the proper component is installed and is installed properly?	
d.	Is there evidence that the suitability of materials, spare parts and equipment for new and existing processes are confirmed?	
Notes/Comments Pertaining to Responses to Questions under Issue 4):		
General On-Site Inspection and Records Audit Notes/Comments:		



C. INTERVIEWS

- 1) **SELECT TWO OR MORE OPERATING PERSONNEL TO INTERVIEW REGARDING THE EFFECTIVENESS OF THE PM/MI PROGRAM USING THE FOLLOWING QUESTION SETS.**
 (RESPONSES ARE TO BE LOGGED ON FOLLOWING PAGES.)

Question Set	Question Options/Phrasing
a	What is your job description and associated tasks?
b	Do you know how maintenance tasks and frequencies were developed? Were you involved in the process where these requirements were determined? Do you think all the present maintenance activities and frequencies are adequate?
c	How is maintenance work scheduled and tracked? How are you assigned work? What information is provided on the work order, or in the instruction given? How do you know which procedures apply to a given maintenance activity? What kind of documentation do you generate?
d	Do you use procedures in performing your duties? How do you access maintenance procedures and vendor manuals? How do you access Safe Work Practices (such as Hot Work, L-O/T-O, etc)? Do you think that any additional procedures or documents are needed for you to adequately and safely perform all assigned tasks?
e	What are the hazards associated with this process? Do you know what the MOC process is and how it works? What kind of training have you had for this position? Is the training adequate?
f	How are spare parts and replacement components are specified, ordered, stocked and issued? How do you know if you have been issued the correct part? How is proper installation of equipment checked?



C. INTERVIEWS			
2) RECORD RESPONSES OF SELECTED OPERATING OR MAINTENANCE PERSONNEL TO QUESTIONS FROM THE QUESTION SETS (LISTED ON THE FIRST PAGE OF SECTION C)			
Employee Profile			
Job Title/Position	Department/Unit/Group	Time in Job	Time w/Co.
Response to Question Set _:			
Response to Question Set _:			
Response to Question Set _:			
Response to Question Set _:			